OVERVIEW

In this lesson, students will consider the differences in gravity between the Earth and the Moon and the meaning of mass, weight and gravity. They will then use stills from footage of the Apollo 17 Lunar lift off to calculate the speed during the initial ascent.

WHAT YOU NEED

- A14 PowerPoint
- 14.1 Weight and gravity worksheet
- 14.2 Lunar lift off worksheet
- Optional – empty plastic bottles and scales

CURRICULUM LINKS

- Reading and taking measurements from a graph.
- Speed, distance, and time.
- Calculating time given a speed and distance.
- Making measurements.
- Gravity, weight and mass.

STARTER

Go through the recap slides on mass, weight and gravity on the PowerPoint, asking students what they think the differences will be between the Earth and the Moon.
MAIN ACTIVITY 1

Hand out sheet 14.1 to students and get them to answer the questions, referring to the information that has just been covered.

Extension activity: Hand students some empty plastic bottles and a set of scales. Get them to fill one of the bottles up with water and weigh it. Then get them to calculate how much water they would need to put in the second bottle to simulate how much lighter this would feel on the Moon. Students can then compare their models.

MAIN ACTIVITY 2

Hand out sheet 14.2 for students to work through. Get them to calculate the average speeds at various points on the Apollo 17 Lunar lift off course.

Extension activity: 14-16 year old students can then plot a graph of average speed against time for each of the intervals. Get them to explain what is happening in terms of acceleration (gradient of the graph) and in terms of the initial explosion to boost the Lunar Module upwards.

PLENARY

Get students to think about some every day activities that they do on the Earth that would be significantly different in the low gravity environment of the Moon.

Discuss their ideas and make sure that they explain HOW and WHY these would be different.